

Appl. No. 10/628,893
Examiner: FOURSON III, GEORGE R, Art Unit 2823
In response to the Office Action dated May 4, 2005

Date: August 4, 2005
Attorney Docket No. 10112521

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims

Claim 1 (currently amended): A method for forming a single-crystal silicon layer on a transparent substrate, comprising:

providing a transparent substrate having an amorphous silicon layer formed thereon and a silicon wafer having a hydrogen ion layer formed therein;

inverting and laminating the silicon wafer onto the amorphous silicon layer so that a layer of single-crystal silicon layer is between the hydrogen ion layer and the amorphous silicon layer; and

subjecting the laminated silicon wafer and the amorphous silicon layer to ~~laser~~ or infrared light to cause chemical bonding of the single-crystal silicon layer and the amorphous silicon layer and inducing a hydro-cracking reaction in-situ thereby separating the silicon wafer and the transparent substrate at the hydrogen ion layer, and leaving the single-crystal silicon layer on the transparent substrate.

Claim 2 (original): The method as claimed in claim 1, further comprising subjecting the single-crystal silicon layer to high temperature annealing and chemical mechanical polishing thus reconstructing the silicon atoms to form a smooth surface.

Claim 3 (original): The method as claimed in claim 1, wherein the transparent substrate is glass, quartz, synthetic quartz, LiNbO₃ or LiTaO₃.

Claim 4 (canceled)

Claim 5 (original): The method as claimed in claim 1, wherein the wavelength of the infrared light is 0.7~1.5.

Claim 6 (original): The method as claimed in claim 1, wherein the hydrogen ion layer is formed by doping with a dosage of $1 \times 10^{16} \sim 5 \times 10^{17}$ cm⁻² and energy of 10~1000 keV.

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Claim 7 (original): The method as claimed in claim 1, wherein the depth of the hydrogen ion layer is 0.1~15 μm from the surface of the silicon wafer.